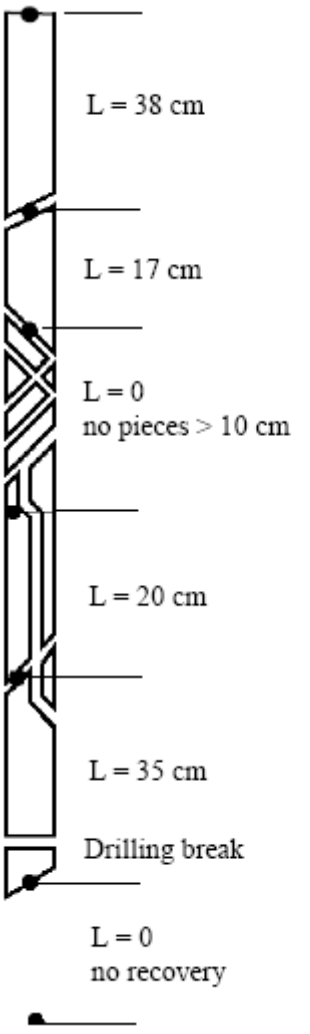
SMG-13: ROCK QUALITY DESIGNATION (RQD)

INTRODUCTION

The Rock Quality Designation (RQD) developed by Deere et. al (1967) is used to quantitatively estimate the quality of rock mass from drill core logs. RQD is defined as the percentage of intact core pieces longer than 100mm (4 inches) in the total length of core.



Total length of core run = 200 cms

$$RQD = \frac{\Sigma \text{ Length of core pieces} > 10 \text{ cm length}}{\text{Total length of core run}} \times 100$$

$$RQD = \frac{38 + 17 + 20 + 35}{200} \times 100 = 55\ \%$$

Figure 1 Procedure for measurement and calculation of RQD (after Deere, 1989)

Apart from RQD, other parameters may be determined from the core log which include Total Core Recovery (TCR), Solid Core Recovery (SCR) and Fracture Index (FI). The descriptions of these parameters are as below

Criteria	Indices
Total Core Recovery, TCR (%)	Ratio of core recovered (solid or non-intact) to length of core run (in 1.5 m length)
Solid Core recovery, SCR (%)	Ratio of solid core recovered to length of core run (in 1.5 m length)
Rock Quality Designation, RQD (%)	Ratio of solid core pieces longer than 100 mm to the length of core run (in 1.5 m length)
Fracture Index	A count of the number of spacing of fractures over an arbitrary length of core of similar intensity of fracturing. Commonly reported either as Fracture Index (F, number of fractures per meter) or as Fracture Spacing (If, mm)

OBJECTIVE

1) To determine RQD of drill rock core logs and to classify rock mass based on this value(s)
2) To relate the RQD values with the various published rock mass classification

APPARATUS

1) Measuring tape
2) Rock core logs

PROCEDURES

1) For determination of RQD and other related parameters (core run, solid core recovery, total core recovery and fracture index), refer to Figure 1.

DISCUSSION

1) Classify rock mass quality from RQD values found.
2) Comment the variation (if any) on RQD values to depth and suggest RQD value to be used for design or classification purposes.
3) Relate RQD values to established rock mass classification system.

DATASHEET

Sample no							
Borehole ref.							
Depth	From		to	From		to	
Description							
Measured Core Length (m)							
Core run (m)							
Solid Core Recovery, SCR (%)							
	SCR = _____%			SCR = _____%			
Total Core Recovery, TCR (%)							
	TCR = _____%			TCR = _____%			
Rock Quality Designation, RQD (%)							
	RQD = _____%			RQD = _____%			
Fracture Index, FI (per m run)	FI =			FI =			
	FI =			FI =			